ABSTRACT

A code division multiple access user equipment is used in receiving a plurality of data signals over a shared spectrum. Each received data signal experiences a similar channel response. A combined signal of the received data signals is received over the shared spectrum. The combined signal is sampled at a multiple of the chip rate. A channel response is estimated. A cross correlation matrix is determined using the estimated channel response. A subblock of the cross correlation matrix is selected. A Cholesky factor for the subblock is determined. The Cholesky factor is extended. The spread data vector is determined using the extended Cholesky factor, a version of the channel response and the samples. Data of the data signals is estimated using the spread data vector.